

Automated High-Volume Manufacturing of Modular Photovoltaic Panel Assemblies for Space Solar Arrays, Phase II

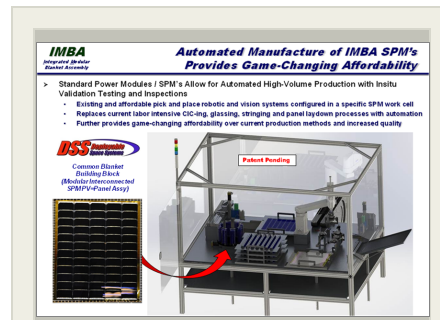
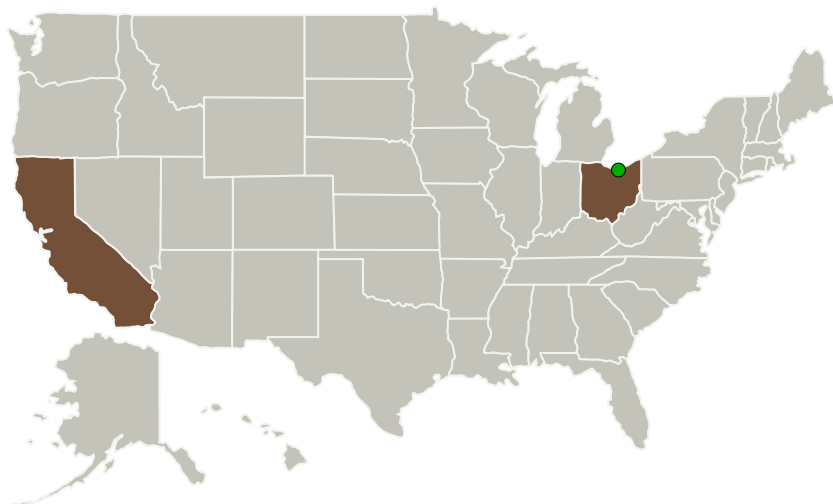
Completed Technology Project (2014 - 2018)



Project Introduction

Deployable Space Systems, Inc. (DSS) will focus the proposed SBIR Phase 2 program on the development and demonstration of an automated robotic manufacturing infrastructure designed to mass-produce DSS's Integrated Modular Blanket Assembly (IMBA) common photovoltaic Standard Power Modules (SPM's). The proposed development and demonstration will implement automated manufacturing processes for CIC-ing, glassing, stringing, laydown, and validation testing of interconnected photovoltaic devices onto an ultra-lightweight IMBA/SPM modular flexible blanket assembly through simple and commercially available pick-and-place robotic manufacturing techniques / equipment. Robotically automated manufacturing of IMBA/SPM photovoltaic panel assemblies will provide game-changing affordability / cost-savings when compared to current labor intensive manufacturing processes. Unlike the current industry approach which is only focused on increasing the device area to only minimally reduce panel assembly costs, the proposed automated manufacturing will attack the highest/most labor intensive cost components of manufacturing a panel assembly, namely; CICing, glassing, stringing, panel laydown, and validation testing. DSS's modular IMBA/SPM photovoltaic flexible blanket assembly coupled with automated manufacturing promises to provide ultra-affordable, high-performance, and repeatable high-quality photovoltaic panel assemblies for future NASA Space Science and Exploration missions, and particularly for ultra-high-power SEP missions.

Primary U.S. Work Locations and Key Partners



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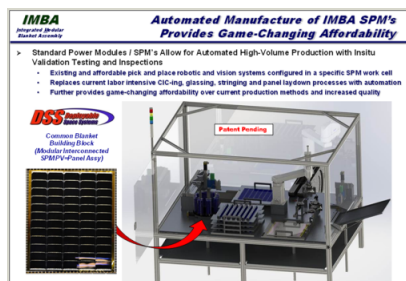


| Organizations Performing Work | Role | Type | Location |
|------------------------------------|-------------------------|-------------|--------------------|
| Deployable Space Systems, Inc(DSS) | Lead Organization | Industry | Goleta, California |
| ● Glenn Research Center(GRC) | Supporting Organization | NASA Center | Cleveland, Ohio |

Primary U.S. Work Locations

| | |
|------------|------|
| California | Ohio |
|------------|------|

Images



Briefing Chart Image

Automated High-Volume Manufacturing of Modular Photovoltaic Panel Assemblies for Space Solar Arrays, Phase II
(<https://techport.nasa.gov/image/127906>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Deployable Space Systems, Inc (DSS)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Brian R Spence

Co-Investigator:

Brian Spence

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Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
 - └ TX03.1 Power Generation and Energy Conversion
 - └ TX03.1.1 Photovoltaic

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System